UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,623	12/27/2005	Seung-Woo Lee	6192.0582.US	5613

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EXAMINER
MA, CALVIN

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/534,623	LEE ET AL.
	Examiner	Art Unit	
	Calvin Ma	2629	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-13* is/are rejected.

7)☒ Claim(s) *6 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/11/2005*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Priority

1.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which

papers have been placed of record in the file.

Information Disclosure Statement

2.   The references listed on the Information Disclosure Statement filed on May 11,

2005 have been considered by examiner; see attached PTO-1449.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-5, 7-11, and 13 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lee et al. (US Patent: 7,030,846) in view of Stokes et al. (US Patent

6,628,828), further in view of Moon et al. (U.S. Patent 6,762,742).

As to claim 1, Lee teaches a liquid crystal display comprising:

a signal controller (100) with a bit number (i.e. 8 bit) smaller than the output image data (i.e. 9 bit), a color correction unit (112, 114, 116) including color coefficients for performing color correction on the image data from the gamma converter, and a dithering and FRC processor (122, 124, 126) reducing a bit number of the image data (9 bit) from the color correction unit by taking upper bits of the image data and controlling position and frequency of the upper bits of the image data (see Fig. 8, Col. 8, Lines 1-44);

a voltage generator generating a plurality of gray voltages by dividing a predetermined voltage lower than a supply voltage (i.e. data driver is able to output select voltages that are generated at the voltage generator, which include V_{on}, V_{off}, and V_{com}) (see Fig. 7, Col. 7, Lines 33-45);

a data driver selecting the gray voltages from the voltage generator and outputting gray voltages corresponding to the image data from the signal controller(i.e. data driver is able to output select voltages that are generated at the voltage generator, which include V_{on}, V_{off}, and V_{com}) (see Fig. 7, Col. 7, Lines 33-45);

However, Lee does not explicitly teach including a gamma converter outputting output image data based on input image data have gamma characteristic adapted to a gamma 2.2 curve; such that a predetermined one of the gray voltages gives a luminance of about 80 cd/m^2; an inverter controlling a lamp to emit a luminance higher than 80 cd/m^2.

Stokes teaches including a gamma converter (104) outputting output image data based on input image data have gamma characteristic adapted to a gamma 2.2 curve (see Stokes Col. 7, Lines 20-21); such that a predetermined one of the gray voltages gives a luminance of about 80 cd/m^2; (i.e. in the SRGB standard the 80 cd/m^2 and 2.2 CRT Gamma is officially enumerated as the luminance level, see ITU-R BT.709) (see Stokes, Fig. 3, Col. 7, Lines 12-24).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the sRGB gamma conversion design of Stoves in the overall signal controller of Lee in order to same computing time and speed up operations. (see Stokes, Col. 1, Lines 45-52).

The combination of Lee in view of Stokes, does not explicitly teaches an inverter controlling a lamp to emit a luminance.

Moon teaches an inverter (62) controlling a lamp (64) to emit a luminance (i.e. the inverter control modifies the output of the lamp depend on the V_{duty} input) (see Fig. 11, Col. 13, Lines 10-30).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have applied the inverter and lamp design of Moon in the overall LCD system of Lee and having it emit luminance higher than 80 cd/m^2 to satisfied the gamma converter of Stokes (since in order to pass through the LC module and achieve 80 cd m^2, the lamp must achieve higher luminance) in order save power consumption and achieve backlighting performance(see Moon, Col. 2, Lines 1-12).

As to claim 7 and 11, see discussion of claim 1 above, claim 7 and 11 is

analyzed to be broader in scope than claim 1 and is rejected on the same ground as

claim 1.

As to claim 2, Stoke teaches the liquid crystal display of claim 1, wherein the

gamma converter comprises an R data modifier, a G data modifier and a B data

modifier for performing the gamma conversion for the input image data for respective

red, green and blue colors, and each of the data modifiers maps the input image data

into output image data having a gamma characteristic adapted to the gamma 2.2 curve

(i.e. since the sRGB standard requires the change of gamma to the 2.2 setting, the input

data must be change accordingly to fit the gamma 2.2 curve) (see Fig. 3, Col. 6, 1-5).

As to claim 3, Stoke teaches the liquid crystal display of claim 2, wherein the data

modifiers include a nonvolatile memory (27) (i.e. the hard disk memory device 27 is

nonvolatile memory) (see Fig. 1, Col. 3, Lines 15-16).

As to claim 4, Stokes teaches the liquid crystal display of claim 1, wherein the

color correction coefficients are expressed in a 3.times.4 color correction matrix (i.e.

since by definition a 5x5 matrix contains numerous 3 x 4 matrix, therefore the color

correction coefficients are expressed in a 3 x 4 matrix as well).

As to claim 5, Stokes teaches the liquid crystal display of claim 4, wherein the

color correction unit performs a matrix operation given by: $(R_s\ G_s\ B_s) = M \times (R_c\ B_c\ G_c$

1), where M is the color correction matrix (i.e. since the 5 x 5 matrix when simplified for

R G B solution can be arrived by M x (R G B 1) as the first row of A transparency can be

ignored) (see Stokes, Fig. 4E).

As to claim 8, see discussion of claim 3 above, claim 8 is analyzed to be broader

in scope than claim 3 and is rejected on the same ground.

As to claim 9, teaches the liquid crystal display of claim 6, wherein the target

image data storage includes a nonvolatile memory in the signal controller and a

nonvolatile memory element provided external to the signal controller.

As to claim 10, see discussion of claim 1 above, Stokes in view of Moon teaches

the liquid crystal display of claim 1, wherein the gamma converter (i.e. the computer

realizing the Gamma Correction operation 104) obtains the output image data from the

input image data by way of a mathematical operation (i.e. the mathematical operation is

applied when the transformation of data carried on a one-dimensional look-up table

which requires mathematical operations to access and convert the digital data) (see Fig.

3, Col. 7, Lines 28-51).

As to claim 13, see discussion of claim 4 above, claim 13 is analyzed to be

broader in scope in claim 4 and is rejected on the same ground.

5.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in

view Stokes, further in view of Moon as applied to claim 1-11, 13-14 above, and further

in view of Brown Elliot et al. (US Patent: 7,221,381).

As to claim 12, teaches the method of claim 11, wherein the gamma

characteristic conversion (i.e. step 104) includes a mathematical operation but does not

explicitly teaches realized on an application specific integrated circuit (ASIC). Brown

Elliot teaches gamma characteristic conversion realized on an application specific

integrated circuit (ASIC) (i.e. performing pre-conditioning Gamma prior to rendering

using ASIC) (see Brown Elliot, Fig. 52A, Col. 40, Lines 57-65).

Therefore it would have been obvious for one of ordinary skill in the art at the

time the invention was made to have used the ASIC circuitry of Brown-Elliot inside the

computer system of Stokes in order to allow precise control of gamma to provide high

quality images (see Brown-Elliot, Col. 4, Lines 1-2).

Allowable Subject Matter

6.   Claim 6, 14 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Stokes et al. "A standard Default Color Space for the Internet –

sRGB" is cited to disclose the sRGB format. Lee et al. (US Pub: 2006/0208983) is cited

to teach an almost identical application having different claim scope.

Inquiry

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713.

The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Calvin Ma
November 28, 2007

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SUPERVISORY PATENT EXA